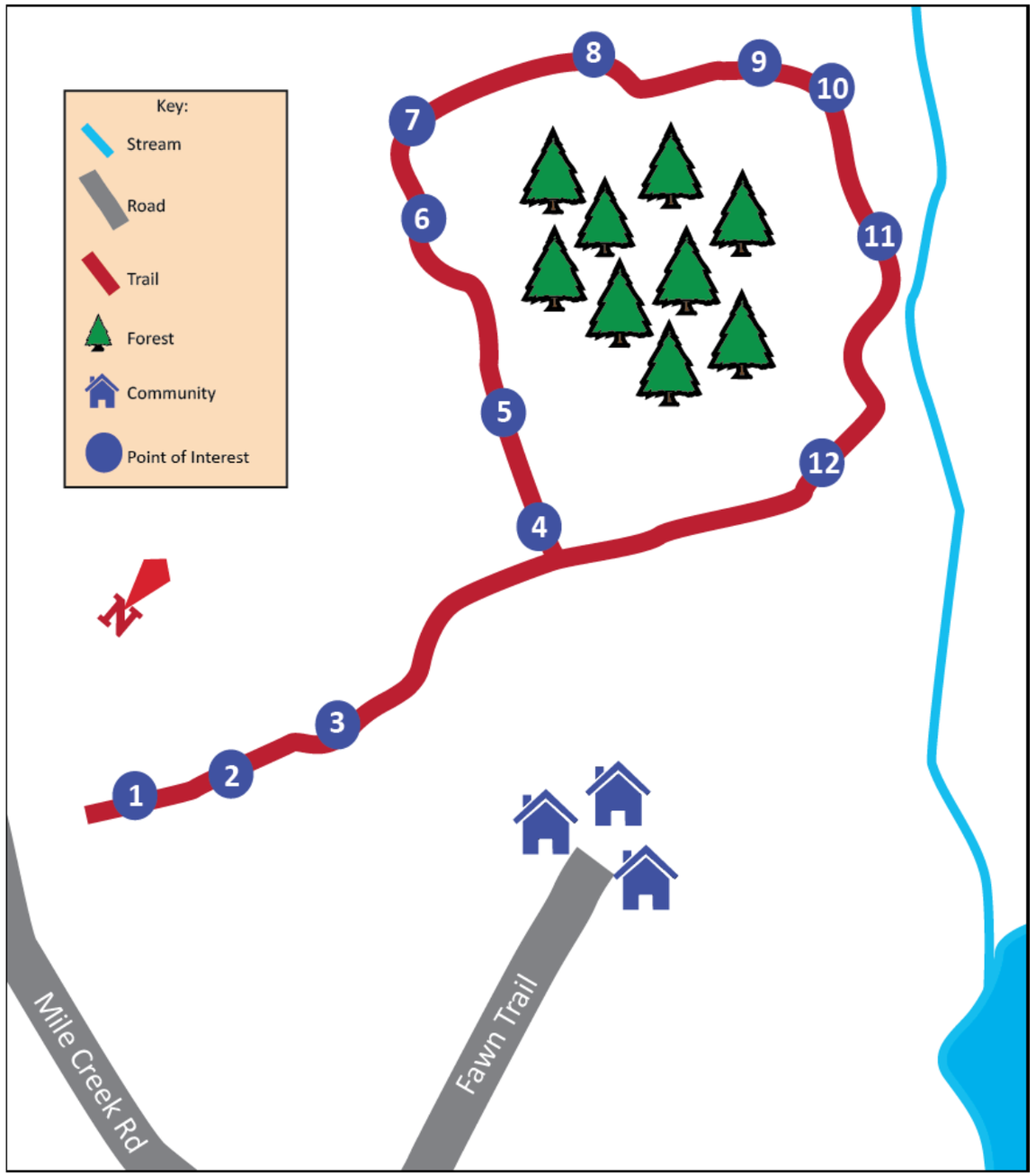

Thank You

Many people helped in the creation of this Mile Creek Educational Trail. Thanks to the second graders of Mile Creek School (2012-2013) and their Art Teacher Helen McDonald, for their fabulous decoration of all the Point of Interest posts. Thanks to Emma Stanton (Class of 2014) for creating the trail map. Thanks to all our volunteers, who hacked, cut and raked the trail into existence; especially Gerry Silberberg who single handedly cut all the posts and placed them in the ground. Stanley Kolber took the wonderful photographs, and we could not have created this brochure without the expertise and encouragement of Lighthouse Printing in Old Saybrook. And of course, we are grateful to Connie and William Pike who generously donated this preserve.

The Old Lyme Land Trust is a non-profit organization dedicated to conserving Old Lyme's natural, scenic and historic land and water resources for the benefit of the public now and for generations to come. The Trust accomplishes its purpose by acquiring land through donation and purchase, managing the land and by providing education to the public.

We welcome your involvement: become a land steward, volunteer, or make a donation. Please visit our web site at oldlymelandtrust.org

Old Lyme Land Trust

Mile Creek Nature Trail

1) GREETING Welcome ladies, gentlemen, and children of all ages, to the amazing world of Nature. We hope that you will learn things on the trail that may surprise and astound you, and make you want to learn more about the world around you. Please follow the trail and stop at each trail marker to learn some Fun Facts. And there is much, much more going on in the woods, so keep your eyes and ears open!

2) BLOWDOWN This mighty black oak tree was blown down by superstorm Sandy. Especially strong wind storms come about once every 100 years. The last one was in 1938 and before that in 1815. Trees that fall in such storms tend to fall toward the southeast. That's because the direction of the wind is usually from the southeast by the time the storm's rains have soaked the ground so thoroughly that the tree can't hold on anymore in the fierce winds.

Oak trees are amazing: their wood makes great furniture, Native Americans used to make flour from their acorns, ancient Druids worshipped them, and King Arthur's round table was made from a single, huge oak. This tree weighed more than three tons when it fell and was probably about 100 years old.

3) ROOTS If you have not been walking carefully, several of you already may have tripped over those annoying roots. But roots are amazing! Roots are able to deliver all the minerals and water a tree needs. A large oak tree can use hundreds of gallons of water on a warm, dry day, all of the water pulled out of the ground through the roots and transported up to the leaves. Evaporation from its leaves helps pull up the water. Think of climbing to the top of a tree with only one gallon (8 pounds). Roots use fungus to help them absorb what the tree needs and most of the roots are within 18 inches of the soil surface, 99 percent within three feet (look at the root mass of the fallen oak you just passed). Trees in other parts of the world can have roots hundreds of feet deep. Roots are strong - they can split rocks, raise roads and destroy house foundations.

4) BEECH GROVE You are standing in front of a beech grove. These trees, with the smooth gray bark, are often found growing in groups like this because they are actually only one tree! When a beech tree gets big enough, its roots can send up a new trunk. They look separate to us, but they're not, sort of like if you could make a whole new you grow out of your foot! The beech tree produces nuts that both humans (you) and animals can enjoy.

Look behind you and you can see the large, very straight and tall trunks of tulip trees (really a kind of magnolia). There's also a leaning tree slightly to your left that was tipped in a big storm, but did not fall over. Please don't ever carve on trees; their bark protects them, like your skin, and once they're scarred, the marks will be there for as long as the tree lives, hurting it and its natural beauty.

5) LEAVES Look up, look down, look all around. What do you see? Did you say leaves? Leaves are often overlooked, taken for granted, and under-appreciated, but leaves are really one of the most important things in the world. The amazing leaf uses sunlight and water to take carbon dioxide out of the air and turn it into sugar, which is food for the plant. At the same time, it releases the oxygen that we breathe. This process is called photosynthesis. Without it, animals, including us, would have nothing to eat!

Because leaves take carbon dioxide out of the atmosphere, they help to offset global climate change. Leaves are also beautiful and give us shade. If you look closely you can see a 'browse line' on trees with low branches, at about four feet above the ground. This is the height an adult deer can easily reach when it eats. You can also see large areas where only ferns are left, because deer don't like to eat ferns.

6) FREAKY TREES In front of you is a black oak tree that has a big, funny-looking growth on its side down near the ground. This kind of growth is called a canker. It's caused by a fungus that infected the tree when it got hurt, sort of like if you get an infection in a cut. Check it out – maybe put a stick into the larger hole. It goes almost all the way through. What a great home for a mouse or maybe a snake!

Behind you are two trees that have 'grafted' their trunks. These trees are a black birch and an oak, different species. When the trees were small, they were individuals, but as they grew larger they could not move apart, so they grew together. Usually with pairs of trees like this, one dies, but these two fused instead. Their roots are linked as well, as are all the roots in a forest. Did you know the trees use their root network to talk to each other? They send chemical signals through the root network and can tell trees a long way away if they are being attacked by bugs, so the distant trees start making chemical defenses. Wouldn't it be fun if we could talk to the trees and they could answer?

7) MYSTERY MOUND Go right up to that big pile of rocks over to the left. There's a circular pit beside it. It's hard to know why the farmer dug the pit, but we know why he piled up all the rocks. What do you think they were for?

We'll tell you in a minute, but first a little Connecticut history. More than 150 years ago the only tree standing here was the large white oak tree with spreading limbs that appears to be growing out of a stone wall behind the Mystery Mound. Trees like this are called wolf trees, not because of anything to do with wolves, but because the branches could grow out wide and 'wolf up' space. When trees grow up together in a forest their lower branches die off, so only those at the top spread wide. Farmers left a few solitary trees along the stone walls around their pastures so they could grow into wolf trees that their sheep and cows could use for shade and shelter.

When Europeans arrived Connecticut was about 90% covered in old forests, but they cut down the trees for wood and to make those pastures, so by 1820 only about 25% of the forest remained. Stone walls were made to clear the land for plowing and because there wasn't enough wood left for fences. To make a field for crops, more rocks had to be removed than when the field was used as a pasture. The big rocks were made into walls at the edges, but all the small rocks were thrown in a pile, like the one we asked you about a minute ago!

Around 1850 free land became available in the Midwest and many farmers abandoned their farms, moving to land with richer soil and fewer rocks. The New Englanders who stayed took jobs in factories in the growing cities. Today Connecticut is about 75% forested, though the trees aren't as big as the ones the first Europeans cut down – some of those were big enough for the settlers to live in while they built their houses. The trail now takes a sharp turn to the north (right).

8) GREENBRIER AND WHITE BOULDER You are still in the old field. If you look across the open area you can see lots of greenbrier plants. These vines have nasty thorns, so don't try to walk through them. Plants cannot run away, so they must come up with ways to defend themselves from animals that might want to eat them, and not many animals want to eat big thorns. Greenbrier thickets are also a favorite hiding place for small animals like mice and bunnies, because big animals that might want to eat them don't like the thorns either. The bunnies, especially the endangered New England cottontail, are extra fond of Greenbrier – it's also one of their favorite foods. You may have heard the story of Br'er Rabbit, who fooled the farmer by begging "Please, please don't throw me into the briar patch" when it was really exactly where he wanted to go!

The field that was here was probably used for crops, which we can guess not only because of the big pile of small rocks you already saw, but because there are no red cedar trees. Sheep and cows don't like to eat red cedar, so in pastures the cedar trees were left alone and grew big.

At the base of the trail marker is a beautiful, smooth boulder made of quartz, which is a rock that was formed by slowly cooling lava that crystallized (igneous rock). This rock is smooth because it was tumbled by a glacier until it came to rest in the spot that eventually became the farmer's field, maybe buried until it was hit by his plow. Most of the rocks in the stone wall behind you are granite, which is also a kind of igneous rock. The bedrock in Old Lyme, way down under all the soil, is mostly gneiss (pronounced "nice"), which was once layers of ancient sea floor, put under intense heat and pressure for millions of years, until it turned to stone (metamorphic rock).

9) GLACIER Where you are standing, as well as all of New England, was once under a mile of ice. About 18,000 years ago the glacier began to melt as the last ice age ended. The little depression and stream that you see in front of you were created by the glacier. The large boulders were picked up by the glacier's ice as it ground over mountain tops far north of here, then dropped where you see them when the ice melted. Long Island, which we can see from our beaches, marks the farthest point to which that glacier grew. Long Island is made mostly of the ground up debris that dropped out when the glacier started to melt. The small brook you see comes out of a swampy area and is the headwater of Swan Brook; it flows into Long Island Sound.

Things looked very different around here for thousands of years as the glacier was melting its way back to the north. It was much colder, and at first only tundra plants could grow. They were eaten by animals like wooly mammoths and reindeer! And did you know that Long Island Sound was a lake until 4,000 years ago? It might still be a lake except that the level of the ocean got higher and higher as all the frozen water in glaciers all over the world melted. When they first started to melt, the seashore was four hundred miles east of here. Old Lyme wasn't on the shoreline then!

10) MOSS AND LICHEN You are now standing next to Swan Brook, a low point in the preserve and a very moist, shaded area, perfect for moss. Mosses love moisture because they have no real roots, so they can't transport water and nutrients like other plants, they just have to absorb what they need directly. Moss plants' fibrous 'rhizoids' are used only for clinging to rocks and soil. You will sometimes see moss at the base of tree trunks, mostly on the north side, where it's shady and moist. Feel a moss - it is so soft. Years ago, people used dried Sphagnum moss from bogs to stuff mattresses, to bind up wounds, and to cushion and warm their shoes.

Lichens, on the other hand, are able to live almost anywhere. Lichens have been put into the cold, airless environment of outer space and were completely unharmed when brought back to earth. A lichen is actually made up of two organisms living together, a fungus and an alga. The fungus gets the better deal, since the alga does photosynthesis that feeds both of them, but the fungus does help some with keeping the alga from drying out. There are lichens that live on rocks in the Arctic. Reindeer live off lichens in the winter. Lichens are also very sensitive to air pollution; you find them all over our trees and rocks, but you won't find any within a 40 mile radius of New York City. There are lots of kinds of lichens, but no matter where you find them, they all grow very slowly, so try not to damage them.

11) SKUNK CABBAGE In the spring and summer there are lots of skunk cabbage plants in this place. If you think skunk cabbage is just a foul-smelling plant, prepare to be amazed. Skunk Cabbage is perhaps the most remarkable thing you'll learn about today! Skunk cabbage flowers are the first thing to come up in the spring, usually in February, and they can generate enough heat to melt the snow around them. Their foul smell attracts flies that think they smell rotten meat, then they crawl into the warm little space inside the flower and end up pollinating the skunk cabbage.

Skunk cabbage plants also have amazing 'contractile' roots that actually pull the plant down into the ground. Its stem is underground, too, and can be bigger than the part you see – some are a foot across and go down three feet under the plant! A single skunk cabbage plant can live for hundreds of years, longer than some of our biggest trees. And except for the flowers in February, they don't even smell unless you crush them!

12) NUTS You are standing near sources of three different nuts: beechnuts, hickory nuts, and oak nuts (acorns). Collectively these nuts are called 'mast', which means 'fruit of the forest'. Both humans, like you, and animals eat these nuts - they are very nutritious. Some animals, such as squirrels and blue jays, collect nuts and hide them for later. Sometimes the animals forget to come back and so a new tree will sprout. This is one way the trees can spread to new locations (remember, plants can't walk to a new spot). Farmers used to turn their pigs out into the forest to fatten on these nuts. Even the bitter acorns can be prepared to make a nice acorn flour. ***IF*** you have a grown-ups' permission, you can look around, find an *uncracked* hickory or beechnut, and have a snack (just be sure you don't have an allergy to tree nuts).